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ABSTRACT

Reading comprehension tests usually contain reading passages followed by multiple choice questions about the passages; but one potential weakness of this format is that the questions may be "passage independent," answerable without necessarily reading the passage first. When examining this phenomenon by assessing a particular test, the "Stanford Test of Academic Skills," researchers administered two forms of the test to 101 tenth graders. One group (49 students) answered Form A test items without reading the passage, then read the Form B passage and answered those questions. The other group (52 students) read the Form A passage and answered its questions, then completed Form B test items without reading the Form B passage. Analysis of test scores shows that both groups achieved significantly higher scores in passage-independent conditions than chance (normal distribution approximations) would predict. These results, coming in the midst of greater demands for tests of basic skills such as reading proficiency, raise doubts about the value of standardized reading tests as they are presently constructed. (RL)

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READING PROFICIENCY AND STANDARDIZED TESTS: ANOTHER OBJECTION*

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Reading comprehension tests often take the form of reading passages followed by multiple choice questions about the passages. Students' answers to the questions are taken as measures of their reading comprehension ability. One potential weakness in such a measure of reading comprehension is that comprehension questions may be passage independent. That is, students may be able to score reasonably well on comprehension questions without having read the passages intended to precede them. Preston (1964) found that college students were able to score significantly higher than chance on the Cooperative English Test when deprived of the passages to which the test questions were supposed to relate. Weaver and Bickley (1967) found that college sophomores deprived of reading passages correctly answered 67 percent as many comprehension questions as sophomores who read the passages. Tuinman (1973-1974), studying performance by fourth-, fifth-, and sixth-grade subjects on five highly regarded and widely used reading tests, found that subjects deprived of the reading passages scored higher than chance on the comprehension questions.

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This potential weakness in traditional multiple choice measures of comprehension is important in at least two respects. Wherever it proves to be an actual weakness, it contributes to the argument that performance on multiple choice tests is an inadequate measure of reading comprehension. Whatever reading comprehension is, a test that involves no reading (except for reading of the test questions) cannot be taken as a measure of it. Moreover, to the extent that multiple choice tests prove to be passage independent, serious questions arise about the practice of using scores from such tests as measures of proficiency upon which grade level promotion, or graduation, may be based. School systems across the country are under increasing pressure now to make such uses of scores derived from multiple choice tests.

One such test is the Stanford Test of Academic Skills (hereafter, TASK). In its Manual it is represented as a test of reading comprehension (p. 7) suitable for use as a measure of proficiency in the basic skills (p. 12). At least one large urban school system in Wisconsin has decided to use it to determine which of its students will be eligible for an academic high school diploma. The purpose of the present study is to assess the Stanford Test of Academic Skills Level 1, Forms A and B, for passage independence.

Method

Subjects for the study were 101 tenth graders randomly selected from an academically heterogeneous population of 489 tenth graders in one of two high schools in a middle-size Wisconsin city.

Materials for the study were developed from TASK Level 1, Form A (questions 1-42), and Form B (questions 1-42). Each subject received a package of materials consisting of two parts: (1) a passage-out component (either Form A or Form B)—that is, the publisher's questions without the reading passages; and, (2) a passage-in component (either Form A or Form B)--that is, the publisher's reading passages followed by questions. Forty-nine subjects received the 42 comprehension items for Form A (passage-out condition) plus the reading passages and the comprehension items for Form B (passage-in condition). Fifty-two subjects received Form B passage-out plus Form A passage-in.

The experimenters administered TASK, Level 1, Forms A and B (with alterations as described above), in October, 1977. Following roughly the example described by Tuinman (1973-74), they used standard directions as follows:

a. An announcement that the tests were being used to get information on the tests, not on the subjects.
b. An explanation of the two-fold character of the test: the first half a test with questions only; the second, a test of the usual sort with passages as well as questions.
c. A statement that results would not be reported to teachers or to other school officials.
d. A plea for cooperation.

The administration of the test under the passage-out and passage-in conditions lasted from 35-50 minutes. All 101 subjects completed their tasks in the time allotted.

Analysis and Results

The study attempted to determine whether subjects, as a group, could achieve raw scores greater than the chance score. Each form of the Stanford Test of Academic Skills, Level 1, contains 42 multiple choice items which are based upon reading passages. Since each item has four choices, the expected chance score is 10.5.

Of the 49 subjects who took Level 1, Form A, in the passage-out condition, 91.8 percent exceeded the chance mean score. The observed mean score for this group was 15.9. Analysis by a one-tailed t-test, $t=2.269$, shows this mean to be significantly greater ($p<0.025$) than the expected chance mean. Fifty-two subjects took Level 1, Form B, in the passage-out condition. One hundred percent exceeded the expected chance mean score. The observed mean score for this group was 18.0. Analysis by a one-tailed t-test, $t=2.048$, shows this mean to be significantly greater ($p<0.025$) than the expected chance mean score.

TABLE 1.--Summary of Results: Passage Out Condition, Stanford Test of Academic Skills, Level 1, Forms A and B

	TASK Form A Passage-Out	TASK Form B Passage-Out
$\bar{X}$	15.9	18.0
Chance $\bar{X}$	10.5	10.5
n	49	52
$s_{\bar{X}}$	2.379	3.662

Calculations based upon a normal approximation to the binominal distribution (where p=.25 and n=42) were conducted for each group of scores. According to these calculations, only 1 percent of the sample was expected to achieve a raw score higher than 17.05. However, 34.7 percent of the Form A sample and 51.9 percent of the Form B sample exceeded the expected score of 17.05. These data are presented in Table 2.

TABLE 2.--Percentages of Subjects Who Beat Chance Stanford Test of Academic Skills, Level 1, Form A and B

Chance Raw Score	% of Sample Expected to Exceed Chance	TASK Form A, Passage Out. % of Sample Exceeding Chance (n=49)	TASK Form B, Passage Out. % of Sample Exceeding Chance (n=52)
10.50	50.0	91.8	100.0
12.41	25.0	73.5	90.1
14.09	10.0	51.0	69.2
16.01	2.5	38.8	57.7
17.05	1.0	34.7	51.9

Finally, Pearson-Product Moment correlations were calculated upon those scores achieved by subjects in either the Form A passage out--Form B passage-in condition or the Form B passage out--Form A passage-in condition. Significant correlation coefficient ($p<.01$) of .5753 and .7457 were obtained for the former and latter conditions respectively. These data are presented in Table 3.

TABLE 3.--Pearson-Product Moment Correlations of Passage Out and Passage In Conditions, Stanford Test of Academic Skills, Level 1 Forms A and B

Condition	n	$\bar{x}$	s.d.	r
TASK Form A, Passage Out	49	15.9	4.44	.5753**
TASK Form B, Passage In	49	27.2	9.09	
TASK FORM B, Passage Out	52	18.0	4.39	.7457**
TASK Form A, Passage In	52	28.5	10.87	

**p<.01

Discussion

This study is generally consistent with the findings of Preston (1964), Weaver (1967), and Tuinman (1973-1974). Taken together, these studies show that subjects have been able to perform quite well in a passage-out condition on a variety of standardized tests of reading comprehension. This information, coupled with the enactment of reading proficiency requirements by various school systems, gives new point to an old concern regarding valid measurement of reading comprehension. Traditionally, reading comprehension has been defined utilizing the passage-in model. That is to say, subjects are confronted with a reading text and comprehension of that text is assessed by multiple choice questions. It might be argued that reading of the sort done under the passage-out condition also involves reading comprehension, since subjects do at least read the questions. However, the fallacy of this line of reasoning, at least as applied to proficiency testing, can be seen when one considers the different roles of

background knowledge, experience, thinking ability, and the like in the two situations.

In passage-in type reading, background knowledge, experience, and so forth are probably necessary conditions (Tuinman, 1973-1974) for comprehension in that they help the reader interpret the text. In passage-out reading, however, background knowledge, experience, thinking ability, and so forth are sufficient conditions for comprehension in that the questions send the reader not to an examination of the text but away from the text to an examination of matters exclusive of it. In consequence, the word "reading" is apparently used in two radically different senses depending upon whether the passage-in or passage-out condition obtains. The correlation coefficients of .5753 and .7457 (see Table 3) calculated from the comprehension scores of subjects in the passage-in and passage-out conditions provide some evidence for this contention. These coefficients, when squared, show that the passage-in reading condition accounts for only 33 percent and 55 percent of the variance in the comprehension scores respectively for Form A and B of the Stanford Test of Academic Skills, Level 1.

People demanding tests of reading proficiency as tests of basic reading skills almost certainly mean reading in the passage-in sense. For measures of such proficiency, therefore, a test on which results may be seriously confounded with passage-out reading ability is clearly inadequate. It is inadequate in that it does not "separate out those elements that are unique to reading, and those that depend but little on reading" (Calfee, 1976:42). A test that did make such a separation might be, as Calfee suggests, an entirely new sort of test.

Continued academic analysis of "comprehension" and declining student populations make the present a likely time for school districts to begin an exploration for new means of measurement. Unfortunately, the mood of concern being spread by the back-to-basics movement apparently is forcing school districts in the direction of expediency, not exploration. This probably means that use of passage independent tests will continue in that tests of this type create the illusion that reading proficiency is being assessed.

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